

# PATENT COOPERATION TREATY

# PCT

## INTERNATIONAL PRELIMINARY EXAMINATION REPORT (PCT Article 36 and Rule 70)

REC'D 09 JUL 2004

WIPC PCT

Applicant's or agent's file reference K0295PCT	<b>FOR FURTHER ACTION</b> See Notification of Transmittal of International Preliminary Examination Report (Form PCT/PEA/416)	
International application No. PCT/JP 03/03485	International filing date (day/month/year) 20.03.2003	Priority date (day/month/year) 12.04.2002
International Patent Classification (IPC) or both national classification and IPC B60C23/04		
Applicant TOYOTA JIDOSHA KABUSHIKI KAISHA et al.		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.


2. This REPORT consists of a total of 10 sheets, including this cover sheet.

☐ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of sheets.

3. This report contains indications relating to the following items:

- I ☒ Basis of the opinion
- II ☐ Priority
- III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV ☒ Lack of unity of invention
- V ☒ Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☐ Certain defects in the international application
- VIII ☐ Certain observations on the international application

Date of submission of the demand  04.10.2003	Date of completion of this report  08.07.2004
Name and mailing address of the international preliminary examining authority:   European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized Officer  Billen, K  Telephone No. +49 89 2399-7020



**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT**

International application No. **PCT/JP 03/03485**

**I. Basis of the report**

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17)*):

**Description, Pages**

1-65 as originally filed

**Claims, Numbers**

1-26 as originally filed

**Drawings, Sheets**

1/21-21/21 as originally filed

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- ☐ the description, pages:
- ☐ the claims, Nos.:
- ☐ the drawings, sheets:

**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT**

International application No. **PCT/JP 03/03485**

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)).

*(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)*

6. Additional observations, if necessary:

**IV. Lack of unity of invention**

1. In response to the invitation to restrict or pay additional fees, the applicant has:

- ☐ restricted the claims.  
☒ paid additional fees.  
☐ paid additional fees under protest.  
☐ neither restricted nor paid additional fees.

2. ☐ This Authority found that the requirement of unity of invention is not complied with and chose, according to Rule 68.1, not to invite the applicant to restrict or pay additional fees.

3. This Authority considers that the requirement of unity of invention in accordance with Rules 13.1, 13.2 and 13.3 is

- ☐ complied with.  
☒ not complied with for the following reasons:

**see separate sheet**

4. Consequently, the following parts of the international application were the subject of international preliminary examination in establishing this report:

- ☒ all parts.  
☐ the parts relating to claims Nos. .

**V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

1. Statement

Novelty (N)	Yes: Claims	2-23
	No: Claims	1, 24-26
Inventive step (IS)	Yes: Claims	5-10, 19-23
	No: Claims	2-4, 11-18, 24-26
Industrial applicability (IA)	Yes: Claims	1-26
	No: Claims	

2. Citations and explanations

**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT**

International application No. **PCT/JP 03/03485**

see separate sheet

**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT - SEPARATE SHEET**

International application No. PCT/JP 03/03485

**Re Item IV**

When considering the cited prior art (see paragraph V.2) the following inventions, being characterized by their Special Technical Features (Rules 13(1) and 13(2) PCT) and making a contribution over this prior art and solving individual problems, can be identified:

- Invention I** (claims 1-18)  
By using a receiving-antenna-moving device the opportunity to receive a signal from a pre-selected wheel mounted transmitter (with a maximum of field strength) could be increased.
- Invention II** (claims 19-23)  
To compensate external influences on the wireless communication a communication-environment detection device measures temperature, humidity or road surface condition.
- Invention III** (claims 24-26)  
To obtain wheel position data a vehicle-running-condition detection device measures the acceleration and turning state of the vehicle.

The above analysis shows that neither the objective problems underlying the subjects of each invention, nor their solutions defined by the technical features, allows for a relationship to be established between the said inventions, based on a single general inventive concept.

Therefore, the 3 groups of claims are not linked by common or corresponding special technical features and thus define 3 different inventions not linked by a single general inventive concept.

The application does not therefore meet the requirement of Unity of Invention as defined in Rule 13(1) & 13(2) PCT.

**Re Item V**

**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT - SEPARATE SHEET**

International application No. **PCT/JP 03/03485**

**Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

**V.1 Prior Art**

Reference is made to the following documents:

D1: US6340930  
D2: EP1059177  
D3: DE19951273

**V.2.1 Independent Claim 1 (1. Invention)**

The application does not meet the requirements of the PCT because the subject-matter of claim 1 is not new (Article 33(2) PCT).

D1 discloses a tire-state obtaining apparatus (fig. 1) including a plurality of wheel-side devices (20) and a body-side device (40) disposed on a body of a vehicle, said tire-state obtaining apparatus obtaining states of tires (fig. 3) of the wheel on the basis of information transmitted from said wheel-side devices (20), wherein each of said plurality of wheel-side devices (20) includes:

- a) a tire state detecting device (22) operable to detect the state of the tire of the corresponding wheel (col. 2, lines 55-64), and
- b) a transmitter (26) device operable to transmit a series (col. 4, lines 1-12) of tire information including tire-state data indicative of the state of the tire detected by said tire-state detecting device (22); and
- c) said body-side device (40) includes at least one receiver device (42) provided commonly for at least two of the transmitter devices (20, fig. 1) and operable to receive sets of the tire information transmitted from said at least two transmitter devices (col. 3, lines 21-30), and
- d) a wheel-position-related-data obtaining device (46) operable to obtain wheel-position-related data relating to positions of said wheels, on the basis of conditions in which said at least one receiver device (42) receives the sets of tire information transmitted from said transmitter devices (col. 4, lines 4-59).

Accordingly, the subject-matter of claim 1 lacks novelty.

**V.2.2 Dependent Claims**

**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT - SEPARATE SHEET**

International application No. **PCT/JP 03/03485**

The dependent claims 2-4 and 11-18 do not appear to contain any additional features which, in combination with the features of any claim to which they refer, meet the requirements of the PCT with respect to novelty and inventive step (Articles 33(2, 3) PCT).

These claims suggest a slight constructional change in the design of the tire-state obtaining apparatus which - considering the disclosure of D1 and D2 - comes within the scope of the customary practice followed by persons skilled in the art, especially as the advantages thus achieved can be readily contemplated in advance. Consequently, the subject-matter of the dependent claims also appears to lack novelty or inventive step, respectively.

The combinations of the features of dependent claims 5-10 are neither known from, nor rendered obvious by, the available prior art.

**V.2.3 Industrial Applicability**

The subject-matter of claims 1 to 18 seems to fulfil the requirement of Article 33(4) PCT since it can be used at least in the automotive industry.

**V.3.1 Independent Claims 19 and 20 (2. Invention)**

D1 discloses a tire-state obtaining apparatus (fig. 1) including a plurality of wheel-side devices (20) and a body-side device (40) disposed on a body of a vehicle, said tire-state obtaining apparatus obtaining states of tires (fig. 3) of the wheel on the basis of information transmitted from said wheel-side devices (20).

Claims 19 and 20 differ therefrom by a communication-environment detecting device.

Therefore, the subject-matter of the present claims 19 and 20 fulfils the provisions of Art. 33 (2) PCT (Novelty) in view of the state of the art as mentioned in the search report.

The problem to be solved by Invention II may therefore be regarded as adaptation of the transmitter/receiver communication parameters to changing

weather conditions.

Whereas the feature of a communication-environment detection device is not contained in or does not seem to be rendered obvious from the state of the art as mentioned in the search report.

The present claims 19 and 20 fulfil therefore the provisions of Art 33 (3) PCT.

### **V.3.2. Industrial Applicability**

Claims 19-23 fulfil the provisions of Art. 33 (4) PCT, because corresponding tire-state obtaining apparatus can be produced and used in the automotive industry.

### **V.3.3. Dependent Claims 21-23**

Claims 21-23 depending on claims 19 or 20 and having as subject-matter special and advantageous embodiments of the invention according to claims 19 or 20 fulfil, together with its subject-matter, the provisions of Art. 33 and Rule 6 PCT.

### **V.4.1 Independent Claim 24 (3. Invention)**

The application does not meet the requirements of the PCT because the subject-matter of claim 24 is not new (Article 33(2) PCT).

D3 discloses a tire-state obtaining apparatus (Fig. 1) including a plurality of wheel-side devices (PS1-PSn, TU1-TUn) respectively provided on a plurality of wheels (R1-Rn) of a vehicle, and a body-side device (RU, CPU) disposed on a body of the vehicle, said tire-state obtaining apparatus obtaining states of tires of the wheels on the basis of information transmitted from said wheel-side devices (col. 5, line 28 - col. 6, line 20), wherein each of said plurality of wheel-side devices includes

- (a) a tire-state detecting device (PS1-PSn) operable to detect the state of the tire of the corresponding wheel, and
- (b) a transmitter device (TU1-TUn) operable to transmit a series of tire information including tire-state data indicative of the state of the tire detected by said tire-state detecting device; and said body-side device includes
- (c) a receiver device (RU) to receive sets of the tire information transmitted from



**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT - SEPARATE SHEET**

International application No. PCT/JP 03/03485

- the respective transmitter devices,
- (d) a vehicle-running-condition detecting device (S1-Sn, DCS1-DCSn) operable to detect a running condition of the vehicle, and
  - (e) a wheel-position-related-data obtaining device (CPU) operable to obtain wheel-position-related data relating to positions of said wheels, on the basis of the running condition of the vehicle detected by said vehicle-running-condition detecting device, and on the basis of at least one of said state of the tire detected by said tire-state detecting device and a change of the detected state of the tire (col. 7, line 49 - col. 9, line 68).

Accordingly, the subject-matter of claim 24 lacks novelty.

**V.4.2 Dependent Claims 25-26**

The dependent claims 25-26 do not appear to contain any additional features which, in combination with the features of any claim to which they refer, meet the requirements of the PCT with respect to novelty and inventive step (Articles 33(2, 3) PCT).

All technical features of claims 25-26 are disclosed by D3 (see col. 7, line 6 - col. 9, line 68).

**V.4.3 Industrial Applicability**

The subject-matter of claims 24 to 26 seems to fulfil the requirement of Article 33(4) PCT since it can be used at least in the automotive industry.

**Re Item VII**

1. The features of the claims have not been provided with reference signs in parenthesis (Rule 6.2 b) PCT).
2. Contrary to the requirements of Rule 5.1(a)(ii) PCT, the relevant background art disclosed in D1, D2 and D3 is not mentioned in the description, nor are these documents identified therein.

**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT - SEPARATE SHEET**

---

International application No. **PCT/JP 03/03485**